

## COMPACT FUSED DISCONNECT SWITCH

## CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 60/242,786 filed October 24, 2000.

## BACKGROUND OF THE INVENTION

[0002] This invention relates generally to fused assemblies, and, more particularly, to switchable fuse assemblies.

[0003] Fuses are widely used as overcurrent protection devices to prevent costly damage to electrical circuits. Fuse terminals typically form an electrical connection between an electrical power source and an electrical component or a combination of components arranged in an electrical circuit. One or more fusible links or elements, or a fuse element assembly, is connected between the fuse terminals, so that when electrical current through the fuse exceeds a predetermined limit, the fusible elements melt and opens one or more circuits through the fuse to prevent electrical component damage.

[0004] In an era of ever-increasing communication services, overcurrent protection of telecommunication systems, such as distribution panels, has become an important issue. While a variety of products, both fuses and circuit breakers, are available to provide overcurrent protection, they exist in a variety of sizes and ratings that often results in an ad hoc assortment of fuses and circuit breakers to protect large, complicated, telecommunications systems. Additionally, capable fuse products exist only with limited mounting and wiring options. The assortment of shapes of overcurrent protection equipment and difficulties in wiring them tends to result in inefficient use of space in limited areas, such as distribution panels, as well as tends to complicate troubleshooting and maintenance of the system, and also tends to complicate identification of operated fuses and/or tripped devices. As space becomes a premium in a competitive telecommunications industry, a more efficient overcurrent protection device is desired.

[0005] One means of efficiently employing a plurality of overcurrent protection devices is the use of a common input bus. Conventional overcurrent

protection devices, however, typically include box clamp wiring features that are difficult to use with a line input bus.

#### BRIEF DESCRIPTION OF THE INVENTION

[0006] In an exemplary embodiment, a fused disconnect switch includes at least one switch housing assembly having a housing defining a fuse receptacle and first and second terminal contact assemblies extending therefrom. At least one of the first and second contact assemblies is a bullet contact assembly, and a retractable fuse is received within the fuse receptacle. The fuse includes a primary fuse link and an open fuse indication device.

[0007] As such, the bullet contact assembly facilitates connections to a line input bus, and the retractable fuse facilitates disconnection of the fused circuit with removal of the fuse for simplified maintenance of a protected system. Local and remote fuse state indication facilitates ready identification of operated fuses for replacement even when a large number of fuses are employed.

[0008] In other aspects of the invention threaded terminal stud contact assemblies are provided in combination with or in lieu of bullet contact assemblies to facilitate quick connection with a known fastener. The fuse may accommodate various primary fuse links of different ratings for use with the switch housing assembly, thereby facilitating use of a variety of fuse protection ratings with a single dimension or footprint that more efficiently utilizes an available space in, for example, a telecommunications panel system. Multiple fuse links may be employed in parallel with a single switch housing assembly for increased overcurrent protection capacity.

[0009] Therefore, at least for the reasons set forth above, a more efficient overcurrent protection device is provided with a plurality of mounting options to simplify installation in the field.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Figure 1 is an exploded perspective view of a fused disconnect switch assembly.

[0011] Figure 2 is a cross-sectional view of the fuse shown in Figure 1.

[0012] Figure 3 is a perspective assembly view of the switch housing assembly shown in Figure 1.

[0013] Figure 4 is a side elevational view with parts removed of the switch housing assembly shown in Figure 3.

[0014] Figure 5 is a perspective assembly view of a second embodiment of a switch housing assembly.

[0015] Figure 6 is a side elevational view of a third embodiment of a switch housing assembly.

[0016] Figure 7 is a perspective assembly view of a fourth embodiment of a switch housing assembly.

[0017] Figure 8 is an exploded view of the switch housing assembly shown in Figure 7.

[0018] Figure 9 is an exploded view of the fuse shown in Figure 7.

[0019] Figure 10 is perspective view of a fifth embodiment of a switch housing assembly.

[0020] Figure 11 is an exploded view of the switch housing assembly shown in Figure 10.

[0021] Figure 12 is an exploded view of a sixth embodiment of a switch housing assembly.

[0022] Figure 13 is an alarm circuit schematic for the fuses shown in Figures 1, 2, 7 and 9.

[0023] Figure 14 is one embodiment of an alarm circuit for the schematic shown in Figure 13.

#### DETAILED DESCRIPTION OF THE INVENTION

[0024] Figure 1 is an exploded perspective view of a fused disconnect switch assembly 10 including a fuse 12 for removable engagement with a switch housing assembly 14. Switch housing assembly 14 includes a first bullet contact assembly 16 for plug in connection to a line input bus (not shown) and a